XVIII. "On the Properties of Electro-deposited Antimony" (concluded). By GEORGE GORE, Esq. Communicated by Professor STOKES, Sec. R.S. Received May 24, 1862.

(Abstract.)

In this communication the author has described two additional kinds of electro-deposited antimony possessing the property of evolving heat; one of them is obtained from a solution of bromide, and the other from a solution of iodide of antimony; there is also given additional information respecting the peculiar heating-antimony obtained from the aqueous terchloride.

The following is a brief statement and comparison of some of the properties of the three kinds of thermically active antimony. The specific gravity of the chloride deposit is 5·8, the bromide one 5·44, and the one from the iodide 5·25. The amount of heat evolved is greatest with the one from the chloride solution, and least with that from the iodide; the former evolves all its heat at 60° Fahr., by contact with a red-hot wire, the bromide one at 280° Fahr., whilst the iodide one requires a temperature of 340° Fahr.; the latter also acquires a reddish-brown colour by exposure to solar light.

The chloride deposit contains about 6·3 per cent. of saline matter, the bromide one about 20, and the one from the iodide liquid about 22·2. The quantities deposited by a single equivalent of zinc were about 42·5 in the chloride, 50 in the bromide, and 51 in the iodide solution.

The explanation proposed of their formation is, that the antimony in depositing, being in the "nascent" state, combines chemically in a feeble manner with the saline ingredients of the electrolyte; but the complete sources of the evolved heat remain undecided.

XIX. "On the Sulphur-Compounds in Purified Coal-Gas, and on Crystallized Hydrosulphocarbonate of Lime." By the Rev. W. R. BOWDITCH, B.A., F.C.S., Wakefield. Communicated by Professor WILLIAM THOMSON, M.A. Received June 14, 1862.

The following facts relative to sulphur in what is called purified coal-gas, are additional to those already submitted to the Royal Society.